

December 2, 2008

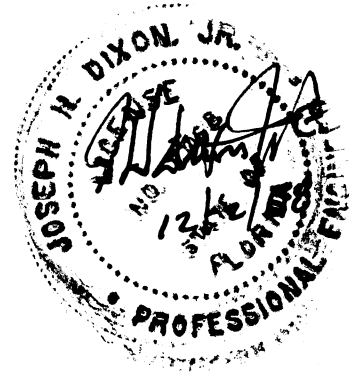
EVALUATION REPORT No.:

ER-08-0011

Reference No.: 28073

Product: Exterior Doors - Rolling Overhead Doors, insulated slats

Manufacturer: Cornell Iron Works
100 Elmwood Avenue
Mountaintop, PA 18707



Statement of Compliance:

The Rolling Overhead Doors described in this report were evaluated to be in compliance with the 2007 Florida Building Code, Sections 2205, and 2209. The doors are, for the purpose intended, at least equivalent to that required by the Code when manufactured and installed as described below.

Description of the Product:

The doors described in this report consist of a curtain made of interlocking formed steel slats suspended from a drum roller. The slats are approximately 3 inches net height in the curtain position. All doors in this report are made using insulated slats. These insulated slats consist of a front slat and a back slat interlocked such that an insulating material can be contained within the front and back slat.

The curtain on all models is suspended from a barrel assembly about which the curtain is coiled to raise the curtain. The sides of the curtain are constrained from lateral movement along their vertical edges by steel guides that are attached to the door jambs. This constraint provides resistance to lateral wind forces. Various guide configurations are used for the different door styles included in this report. The lateral wind forces are transferred from the curtain to the guides and then through the attachment elements to the door jamb. The door jambs are part of the main wind frame resisting system and usually are constructed of steel, concrete, or concrete masonry units.

Insulated slats

The doors are fully described in the attached Cornell drawings, Dwg. No. ES16-23-01 sheets 1 through 23, Rev B 11/25/08. The slat used for all doors is an insulated slat with various gage front and back slats. The thickness of the formed insulated slat is 1.0" for all insulated slats. Identification of the front and back slats is contained in the insulated slat designation. For example, a 20/24 gage slat indicates the front slat to be 20 gage and the back slat to be 24 gage. Sheets 1 through 6 of Dwg. No. ES16-23-01 show the details of the door construction, guides, and the various components.

Sheets 7 through 23 are tables showing the specific door requirements for each of the slat types, (24/24, 22/24, 20/24, 18/24, and 22/22 gage). There are separate tables for design wind loads of 30, 40, 50, 60 and 120 psf. Specific requirements are shown for a range of door widths in 1'-0" increments for each of the slat type and design pressure combinations.

Slats may be manufactured using galvanized steel sheet, ASTM A653 HSLAS Type B, grade 40; ASTM A653 HSLAS Type A, grade 40 or ASTM A653 structural steel, grade 40.

Stainless steel slats may be manufactured using Type 304, 430 or 201 Stainless Steel, (min. yield 40,000 psi).

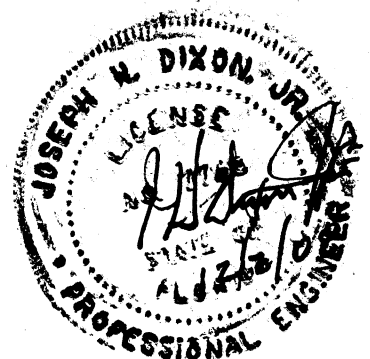
A rational analysis was made on each tabulated door to determine the structural requirements of the curtain, guides, windlock attachments, and guide attachments for each of the indicated design wind pressures. A comparison with test results was made to substantiate analytic results.

Technical Documentation:

Test results and Miami-Dade County Notices of Acceptance (NOA) were used to substantiate the analysis procedure. The following information was considered in a comparative analysis of the design.

Door Tests with insulated slats

1. ASTM E330 test, 16'-4" wide opening, 20/24 gage, CP0001 slat (insulated), +/- 60 psf design wind load, Architectural Testing Report No. 01-39587.07 dated 10/09/02
2. Dade County NOA No. 06-1205.07, Approved 05/10/07, 14'-5" wide opening, 20/24 gage, CP0001 slat, +/- 120 psf design wind load, Certified Testing Laboratories Report No. CTLA-1600W dated 11/29/06, tests per 2007 Florida Building Code Test Protocols HVHZ, TAS 201-94, TAS 202-94, and TAS 203-94. Slat tension tests per ASTM E8, CTLA-1600W and CTLA-600W-1 dated 12/04/06
3. Dade County NOA No. 07-0108.02, Approved 07/05/07, 25'-5" wide opening, 20/24 gage, CP0001 slat, +/- 60 psf design wind load, Certified Testing Laboratories Report No. CTLA-1600W-1 dated 12/04/06, tests per 2007 Florida Building Code Test Protocols HVHZ, TAS 201-94, TAS 202-94, and TAS 203-94. Slat tension tests per ASTM E8, CTLA-1600W and CTLA-600W-1 dated 12/04/06
4. Dade County NOA No. 08-0425.10, Approved 07/17/08, 12'-5" wide opening, 20/24 gage, CP0001 slat, +/- 60 psf design wind load, Architectural Testing, Inc. Report No. 79232.01-109-18 dated 02/25/08, tests per 2007 Florida Building Code Test Protocols HVHZ, TAS 201-94, TAS 202-94, and TAS 203-94. Slat tension tests per ASTM E8.



Door Tests with non-insulated slats

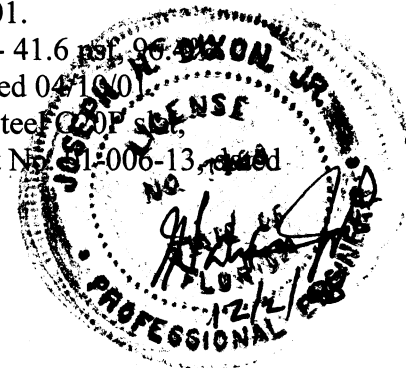
1. a) ASTM E330-97 test, 25'-4" wide opening, 20 gage C20P slat, +/- 60 psf design wind load, Architectural Testing, Report No. 01-39587.04 dated 11/28/01.
 - b) Dade County NOA No. 07-0816.05, Approved 09/20/07, 25'-4" wide opening, 20 gage C20P slat, +/- 60 psf design wind load. Includes tests per Dade County Protocols PA 201-94, PA 202-94, and PA 203-94 conducted by Architectural Testing, Report No: 01-39587.05, dated 4/30/02.
 - c) Tensile tests, 6 specimen coupons from C20P slat, 20 gage, tested per ASTM E8-00b. Tests conducted by Architectural Testing, Report No: 01-39587.06, dated 4/30/02.
2. ASTM E330-97 test, 22'-4" wide opening, 22 gage C20P slat, +/- 40 psf design wind load, Architectural Testing, Report No. 01-41691.01 dated 7/02/02.
 3. Dade County NOA # 08-0529.04, Approved 09/18/08, 14'-5" wide opening, 22 gage CP0020 slat, +/- 60 psf design wind load. Includes tests per Dade County Protocols TAS 201-94, TAS 202-94, and TAS 203-94 conducted by Architectural Testing, Report No: 79233.01-109-18, dated 03/13/08
 4. Slat tension tests per ASTM E8.

Research Slat Tests with insulated slats

1. ASTM E330 test, 7'-0" clear span, 24/24 gage steel C1P slat, +/- 93.6 psf, 100% recovery Construction Testing Corporation Report No. 01-006-1, dated 04/10/01
2. ASTM E330 test, 7'-0" clear span, 24/24 gage steel C1P slat, +/- 93.6 psf, 100% recovery Construction Testing Corporation Report No. 01-006-2, dated 04/10/01
3. ASTM E330 test, 7'-0" clear span, 22/24 gage steel C1P slat, +/- 93.6 psf, 100% recovery Construction Testing Corporation Report No. 01-006-3, dated 04/10/01
4. ASTM E330 test, 7'-0" clear span, 20/24 gage steel C1P slat, +/- 93.6 psf, 97% recovery Construction Testing Corporation Report No. 01-006-4, dated 04/10/01
5. ASTM E330 test, 7'-0" clear span, 18/24 gage steel C1P slat, +/- 93.6 psf, 100% recovery Construction Testing Corporation Report No. 01-006-5, dated 04/10/01
6. ASTM E330 test, 7'-0" clear span, 24s.s./24galv gage steel C1P slat, +/- 93.6 psf, 93.8% recovery. Construction Testing Corporation Report No. 01-006-6, dated 04/10/01
7. ASTM E330 test, 7'-0" clear span, 24s.s./24s.s. gage steel C1P slat, +/- 93.6 psf, 93.8% recovery. Construction Testing Corporation Report No. 01-006-7, dated 04/10/01
8. ASTM E330 test, 7'-0" clear span, 18/18 B & S aluminum gage steel C1P slat, +/- 31.2 psf, 97.6% recovery. Construction Testing Corporation Report No. 01-006-8, dated 04/10/01

Research Slat Tests with non-insulated slats

9. ASTM E330 test, 7'-0" clear span, 22 gage steel C20P slat, +/- 31.2 psf, 100% recovery Construction Testing Corporation Report No. 01-006-9, dated 04/10/01.
10. ASTM E330 test, 7'-0" clear span, 20 gage steel C20P slat, +/- 62.4 psf, 100% recovery Construction Testing Corporation Report No. 01-006-10, dated 04/10/01.
11. ASTM E330 test, 7'-0" clear span, 18 gage steel C20P slat, +/- 83.2 psf, 94.9% recovery Construction Testing Corporation Report No. 01-006-11, dated 04/10/01.
12. ASTM E330 test, 7'-0" clear span, 20 gage stainless steel C20P slat, +/- 41.6 psf, 96% recovery. Construction Testing Corporation Report No. 01-006-12, dated 04/10/01.
13. ASTM E330 test, 7'-0" clear span, 16 B & S aluminum gage stainless steel C20P slat, +/- 31.2 psf, 97.9% recovery. Construction Testing Corporation Report No. 01-006-13, dated 04/10/01.



Installation Requirements:

Installation requirements are described in Cornell Iron Works Operation & Maintenance Manual, Rolling Doors, cover sheet plus 7 pages, undated.

Impact Resistance

Insulated 20/24 gage galvanized steel slat doors have passed the tests for impact and cycling per the 2007 Florida Building Code Test Protocols HVHZ, TAS 201-94 and TAS 203-94 on both sides of the door, thus permitting installation of the door on either the inside or the outside of the wall. All doors of this gage or heavier may be considered to be impact resistant.

Limitations and Conditions of use:

The use of the door is limited to buildings for which the design wind loads for wall components and cladding, determined in accordance with Section 1609 of the 2007 Florida Building Code, do not exceed the rated design wind loads of the door as shown on the Cornell Drawing No. ES16-23-01, sheets 7 through 23.

The maximum width limitations for each style are shown in the attached tables. The maximum height for all doors is limited to 30 ft.

The doors covered by this report are not for use in the Florida High Velocity Hurricane Zone.

Door manufacturing is limited to those plants that have met the 2007 Florida Building Code Product Approval quality assurance requirements.

Certification of Independence:

I, Joseph H. Dixon, Jr., certify that I am self-employed and operate as an independent contractor providing professional engineering services. I have no financial interest in nor will I acquire any financial interest in any company manufacturing or distributing products for which evaluation or validation reports have been issued by me.

Likewise, I have no financial interest in nor will I acquire any financial interest in any other entity involved in the approval process of those products for which I have issued reports.



Joseph H. Dixon, Jr. P.E.

